UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/699,923	10/30/2000	David H. Lynch	2836-E	8828

22932 7590 11/26/2003

IMMUNEX CORPORATION
LAW DEPARTMENT
51 UNIVERSITY STREET
SEATTLE, WA 98101

EXAMINER	
GAMBEL, PHILLIP	
ART UNIT	**PAPER NUMBER**
1644	

DATE MAILED: 11/26/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/699,923	LYNCH ET AL.	
	Examin r	Art Unit	
	Phillip Gambel	1644	

-- The MAILING DATE of this communication appears on the cover sheet with the correspond nc address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 August 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *12,13 and 15-36* is/are pending in the application.

4a) Of the above claim(s) *12,13,17-22 and 33-35* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *15,16,23-25,29-32 and 36* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office Action has been withdrawn pursuant to 37 CFR 1.114.

Applicant's submission filed on 8/28/03 has been entered.

Applicant's amendment, filed 8/28/03, has been entered.
Claims 15 and 29 have been amended.

Claims 15,16, 23-25, 29-32 and 36 are being acted upon as the elected invention / species, that is, Group II (claims 15-16, 23-36) and the species GM-CSF.

Claims 12-13,17-22, 26-28 and 33-35 have been withdrawn from consideration by the examiner 37 CFR 1.142(b), as being drawn to a nonelected invention and/or species.

Claims 1-11 and 14 have been canceled previously.

2. This Office Action will be in response to applicant's arguments, filed 8/28/03.
The rejections of record can be found in the previous Office Actions.

3. Claims 15,16, 23-25, 29-32 and 36 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 15, 16, 23-25, 29-32 and 36 are indefinite in the recitation "wherein flt3-ligand is the only colony stimulating factor or cytokine used in the method" in independent claims 15 and 29, wherein the dependent claims recite "further comprising contacting the hematopoietic stem or progenitor cells with GM-CSF" (e.g. see claims 16, 25 and 32 as well non-elected claims 26-28 and 33-35) because the claims are ambiguous and confusing. For example, "GM-CSF" is a cytokine or colony stimulating factor. Therefore, the dependent claims which recite "further comprising contacting the hematopoietic stem or progenitor cells with GM-CSF" stand in direct contradiction with the recitation "wherein flt3-ligand is the only colony stimulating factor or cytokine used in the method" in independent claims 15 and 29. It is noted that the claimed methods recite "comprising" which leaves the claim open for the inclusion of unspecified ingredients even in major amounts. See MPEP 2111.03. Here, the recitation of the claims appears to limit the use of only flt3-ligand on one hand, yet permits the additional use of other colony stimulating factors and cytokines, such as GM-CSF.

It is noted that claims 15, 23, 24, 29 and 36 do not indicate the incorporation of additional cytokines or growth factors as currently recited

However, given the ambiguity of whether additional colony stimulating factors or cytokines can be incorporated into the claimed methods, given that GM-CSF can be incorporated in the to claimed methods and given the open "comprising" language; the claims are read in the context that additional cytokines and colony stimulating factors can be added to the claimed methods.

Again, the recitation "wherein flt3-ligand is the only colony stimulating factor or cytokine used in the method" in independent claims 15 and 29 is acknowledged. However given the ambiguity indicated herein and the species election of GM-CSF, additional cytokines or growth factors can be added to the claimed methods.

Applicant should amend the claims to clearly recite the use of "flt3-ligand" as the sole cytokine or growth factor or "flt3-ligand" and "GM-CSF" as the sole combination with appropriate claim language (e.g. "consisting of") to avoid the ambiguities in the claimed methods.

Applicant should specifically point out the support for any amendments made to the disclosure. See MPEP 714.02 and 2163.06

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 15,16, 23-25, 29-32 and 36 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Galy et al. (U.S. Patent No. 6,015,554) (see entire document) for the reasons of record set forth in the previous Office Actions and addressed herein.

Applicant's arguments, filed 8/28/03, have been fully considered but are not found convincing essentially for the reasons of record and ambiguities of the metes and bounds of the claims as addressed above in the rejection under 35 USC 112, second paragraph.

Applicant relies upon amending the claims to specify that flt3-ligand is the only colony stimulating factor or cytokine used in the method.

Again, it is noted that claims 15, 23, 24, 29 and 36 do not indicate the incorporation of additional cytokines or growth factors as currently recited

However, given the ambiguity of whether additional colony stimulating factors or cytokines can be incorporated into the claimed methods, given that GM-CSFD can be incorporated in the to claimed methods and given the open "comprising" language; the claims are read in the context that additional cytokines and colony stimulating factors can be added to the claimed methods.

It is noted that if the claims were limited to flt3-ligand alone or the combination of flt3-ligand and GM-CSF alone, the prior art rejection under 35 U.S.C. § 102(e) as being anticipated by Galy et al. (U.S. Patent No. 6,015,554) would be withdrawn.

Applicant is invited to consider providing an independent claim that is limited to flt3-ligand alone or the combination of flt3-ligand and GM-CSF alone.

The following of record is reiterated for applicant's convenience.

Galy et al. teach methods of inducing $CD34^+$ progenitor and stem cell populations into dendritic cells capable of dendritic functional activities including antigen-presenting ability (e.g. columns 7-8, overlapping paragraph) including loading cells with antigen (column 11, paragraph 1) (e.g., see Detailed Description of the Invention, including columns 7-11, Examples 1-3, 8). Example 8 on columns 27-28 provides for the differentiative potential of $CD34^+$ progenitor populations with cytokines including FLT3 ligand and GM-CSF into cells with the morphological and immunophenotypic features associated with dendritic cells.

Given that the prior art first teach isolating and expanding dendritic cell populations, followed by employing said dendritic cells for various immune responses after presenting or loading said cells with antigen, there does not appear to be a manipulative difference in method steps between the prior art and the claimed methods.

Applicant is reminded that no more of the reference is required than that it sets forth the substance of the invention. The claimed functional limitations would be inherent properties of the referenced methods to produce dendritic cells from $CD34^+$ progenitor and stem cell populations in the presence of FLT3 ligand and GM-CSF and the referenced use of dendritic cells to present antigen.

Applicant's arguments are not found persuasive.

7. Claims 15, 16, 23-25, 29-32 and 36 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Galy et al. (U.S. Patent No. 6,015,554) in view of Steinman et al. (U.S. Patent No. 5,994,126) for the reasons set forth in previous Office Actions and addressed herein.

Applicant's arguments, filed 8/28/03, have been fully considered but are not found convincing essentially for the reasons of record and addressed above in the rejection under 35 USC 112, second paragraph.

Applicant relies upon amending the claims to specify that flt3-ligand is the only colony stimulating factor or cytokine used in the method.

Again, it is noted that claims 15, 23, 24, 29 and 36 do not indicate the incorporation of additional cytokines or growth factors as currently recited

However, given the ambiguity of whether additional colony stimulating factors or cytokines can be incorporated into the claimed methods, given that GM-CSFD can be incorporated in the to claimed methods and given the open "comprising" language; the claims are read in the context that additional cytokines and colony stimulating factors can be added to the claimed methods.

It is noted that if the claims were limited to flt3-ligand alone or the combination of flt3-ligand and GM-CSF alone, the prior art rejection under 35 U.S.C. § 102(e) as being anticipated by Galy et al. (U.S. Patent No. 6,015,554) would be withdrawn.

Applicant is invited to consider providing an independent claim that is limited to flt3-ligand alone or the combination of flt3-ligand and GM-CSF alone.

The following of record is reiterated for applicant's convenience.

Galy et al. teach methods of inducing $CD34^+$ progenitor and stem cell populations into dendritic cells capable of dendritic functional activities including antigen-presenting ability (e.g. columns 7-8, overlapping paragraph) including loading cells with antigen (column 11, paragraph 1) (e.g., see Detailed Description of the Invention, including columns 7-11, Examples 1-3, 8). Example 8 on columns 27-28 provides for the differentiative potential of $CD34^+$ progenitor populations with cytokines including FLT3 ligand and GM-CSF into cells with the morphological and immunophenotypic features associated with dendritic cells. Although

Galy et al. does not explicitly indicate that the FLT3 ligand was recombinantly made, the patentability of a product does not depend on its method of production. In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985) See MPEP 2113. Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ recombinant cytokines or molecules such as FLT3 ligand at the time the invention was made, given the standard and convenient use of homogeneous recombinant molecules at the time the invention was made by the ordinary artisan

The Examples (e.g. Example 8) in Galy et al. do no explicitly expose the $CD34^+$ progenitor and stem cell populations into dendritic cells incubated with cytokines including FLT3 ligand and GM-CSF with antigen to process and express antigen per se.

In addition to the to art known teaching of dendritic functional activities including antigen-presenting ability (e.g. columns 7-8, overlapping paragraph) including loading cells with antigen (column 11, paragraph 1) (e.g., see Detailed Description of the Invention, including columns 7-11, Examples 1-3, 8) referenced by Galy et al., Steinman et al. also teach the art known exposure of dendritic cells to antigen in order to process and express antigen (see entire document)

Steinman et al. teach producing dendritic cell precursors, including $CD34^+$ precursors, which mature into mature dendritic cell populations including pulsing said dendritic cells with antigen as well as their expansion by a number of cytokines, including GM-CSF for various immunological interventions (see entire document, including Summary of the Invention; Detailed Description of the Invention, columns 12-51).

One of ordinary skill in the art at the time the invention was made would have been motivated to expose $CD34^+$ progenitor and stem cell populations into dendritic cells incubated with cytokines including FLT3 ligand and GM-CSF with antigen to process and express antigen for various immunological procedures and interventions, known and practiced with dendritic cells at the time the invention was made. From the teachings of the references, it was apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was prima facie obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

Applicant arguments are not found persuasive. In contrast to applicant's assertions, there does not appear to be a manipulative difference in method steps between the prior art and the claimed methods.

8. Claims 15, 16, 23-25, 29-32 and 36 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Steinman et al. (U.S. Patent No. 5,994,126) in view of
Lyman et al. (U.S. Patent No. 5,554,512; 1449) AND Inaba et al. (PNAS 90: 3038-3042, 1993; 1449) for the reasons of record set forth in previous Office Actions and addressed herein.

Applicant's arguments, filed 8/28/03, have been fully considered but are not found convincing essentially for the reasons of record and addressed above in the rejection under 35 USC 112, second paragraph.

Applicant relies upon amending the claims to specify that flt3-ligand is the only colony stimulating factor or cytokine used in the method.

Again, it is noted that claims 15, 23, 24, 29 and 36 do not indicate the incorporation of additional cytokines or growth factors as currently recited

However, given the ambiguity of whether additional colony stimulating factors or cytokines can be incorporated into the claimed methods, given that GM-CSFD can be incorporated in the to claimed methods and given the open "comprising" language; the claims are read in the context that additional cytokines and colony stimulating factors can be added to the claimed methods.

It is noted that if the claims were limited to flt3-ligand alone or the combination of flt3-ligand and GM-CSF alone, the prior art rejection under 35 U.S.C. § 102(e) as being anticipated by Galy et al. (U.S. Patent No. 6,015,554) would be withdrawn.

Applicant is invited to consider providing an independent claim that is limited to flt3-ligand alone or the combination of flt3-ligand and GM-CSF alone.

The following is reiterated for applicant's convenience.

Steinman et al. teach producing dendritic cell precursors, including $CD34^+$ precursors, which mature into mature dendritic cell populations including pulsing said dendritic cells with antigen as well as their expansion by a number of cytokines, including GM-CSF for various immunological interventions (see entire document, including Summary of the Invention; Detailed Description of the Invention, columns 12-51).

Steinman et al. differs from the claimed invention by not disclosing FLT3-ligand per se in expanding dendritic cell populations.

Lyman et al. teach the use of FLT3-ligand, including recombinant FLT3 ligand, alone or in combination with other cytokines encompassed by the claimed invention to stimulate the proliferation of hemopoietic and non-hemopoietic stem cells (see entire document, columns 6-7). Lyman et al. differ from the claimed invention, by not teaching that dendritic themselves are conducive to FLT3-ligand stimulation.

Inaba et al. teach the granulocytes, macrophages and dendritic cells arise from a common hemopoietic progenitor, wherein said progenitor are stimulated by cytokines such as GM-CSF (see entire document, including Abstract, Introduction). Given that dendritic cells have a common stem cell with other hemopoietic progenitors/stem cells and the cytokines such as GM-CSF provided stimulatory activity to such stem/dendritic cells; the provision of FLT3-ligand and GM-CSF would have been expected to provide stimulatory activity of various hemopoietic cells, including dendritic cells at the time the invention was made.

One of ordinary skill in the art at the time the invention was made would have been motivated to expose $CD34^+$ progenitor and stem cell populations into dendritic cells incubated with cytokines including FLT3 ligand and GM-CSF with antigen to process and express antigen for various immunological procedures and interventions, known and practiced with dendritic cells at the time the invention was made. From the teachings of the references, it was apparent that one of ordinary skill in the art would have had a reasonable expectation of success in producing the claimed invention. Therefore, the invention as a whole was prima facie obvious to one of ordinary skill in the art at the time the invention was made, as evidenced by the references, especially in the absence of evidence to the contrary.

Applicant's arguments are not found persuasive. In contrast to applicant's assertions, there does not appear to be a manipulative difference in method steps between the prior art and the claimed methods.

9. No claim is allowed.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phillip Gambel whose telephone number is (703) 308-3997. The examiner can normally be reached Monday through Thursday from 7:30 am to 6:00 pm. A message may be left on the examiner's voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Chan can be reached on (703) 308-3973. Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center 1600 receptionist whose telephone number is (703) 308-0196.

After January 20, 2004, Phillip Gambel's telephone number will be (571) 272-0844 and Christina Chan's telephone Number will be (571) 272-0841.

Papers related to this application may be submitted to Technology Center 1600 by facsimile transmission. Papers should be faxed to Technology Center 1600 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CM1 Fax Center telephone number is (703) 872-9306.

Phillip Gambel, PhD.
Primary Examiner
Technology Center 1600
November 24, 2003